Preface

Seven new contributions in this fourth issue of *Nuova Voltiana* add fresh insights to our knowledge of Alessandro Volta's work and cultural environment.

At the same time we are happy to inform the community of the historians of science that new research tools on "Volta and his Times" have appeared. In fact a promise made in the preface to the first volume has been kept: the CD-ROM with the complete set of seven volumes of the *Edizione Nazionale delle Opere* has been published.[1] It also includes the five volumes of the *Epistolario*, the volume of the *Aggiunte* and the two volumes of the *Indici*. A great effort has been made to link all the references of these last two impressive volumes to the corresponding texts in the first thirteen. Full search for the recurrences of each word can be made, on each single volume and/or on all the volumes together. The copy and paste capability will without doubt be appreciated. This digital edition provides both faithful images of each single page of the printed version and, associated with them, the text resulting from the optical character recognition scanning. Thus the original numbering of pages has been kept and the reader will always be able to compare the scanned text with the original. We hope that as a result of careful proofreading the number of discrepancies will be negligible. This new tool will without doubt offer possibilities for broader and deeper research. It will now be possible to face with relative ease the important ecdotic problem that is connected with the editorial criteria adopted by the National Commission. As is well known, of the 152 "Opere" (works) into which the Commission arranged Volta's writings in the seven volumes of the *Edizione Nazionale* a significant number were not published by Volta, but resulted from a careful though somewhat arbitrary selection and joining up of the papers. The Commission published on the title page of each "Opera" the criteria adopted, and made precise reference to the manuscripts used. The manuscripts had been gathered together by and preserved at the *Istituto Lombardo Accademia di Scienze e Lettere* in Milan. At the beginning of the twentieth century Alessandro Volta junior, a grandson of the Pavia scientist,

[1] BEVILACQUA, FABIO and BONERA, GIANNI and FALOMO, LIDIA eds., *Alessandro Volta. Edizione Nazionale delle Opere e dell'Epistolario*, CD-ROM, Milano: Hoepli, 2002.

wrote an *Indice Regesto* of the manuscripts, in which he classified them using criteria later largely adopted by the Commission for publication. Until recently, only the original manuscript of this *Regesto* existed, full of important descriptions of each of the 1,004 Volta documents kept at the *Istituto Lombardo*. We are happy now to say that a printed edition, which includes a revision of all the names and bibliographical references cited, is available.[2]

We are also proud to announce the publication of the catalogue of Volta's surviving instruments preserved at the University of Pavia.[3]

In the first article contained in this volume, MAURIZIO MAMIANI analyses the Galvani-Volta debate in the framework of the eighteenth-century "maps of knowledge". He discusses the evolution of Aristotelian disciplinary frameworks both in Chambers' *Cyclopaedia* and in Diderot and d'Alembert's *Encyclopédie*. He explores the Italian situation by considering attempts at disciplinary classification by Zorzi, Canterzani and Riccati. According to Mamiani, the main aspect of the Galvani-Volta controversy is that animal electricity was for Galvani unbalanced *naturally* and for Volta unbalanced *artificially*. He relates this contrast to the division between the natural and the artificial, which was the basis of Chambers' classification system, and points out how, in the last analysis, this division can be traced back to that established by Aristotle between nature and the human arts. The dispute therefore concerned what distinguished the natural from the artificial and, for Galvani, the former should be given cognitive prominence. Volta chose to give theoretical value to the results obtained artificially. In this sense, Volta's work helped raise the status of physics by providing the language of experiments with unprecedented authority and autonomy.

DIETRICH VON ENGELHARDT studies the complex interplay between philosophy and natural science in the decades around 1800. In relation to this problem, he identifies four mainstream lines to be taken into account: empirical science with its corresponding epistemology and methodology (Nollet, Senebier, Zimmermann, Cabanis), the transcendental philosophy of nature (Kant, Fries), the speculative philosophy of nature (Schelling, Hegel), and the romantic *Naturforschung.* Special attention is focused on the latter and it is argued that it was a rather heterogeneous movement with various orientations, determined in a significant way by social, institutional and biographical factors. The picture sketched is particularly interesting if related to the other papers collected in this volume, which as a counterpart point out a lack of interest on Volta's part in romantic *Naturforschung*, and cast light on the specific disciplinary, institutional and educational patterns in which he operated.

[2] BEVILACQUA, FABIO and FERRARESI, ALESSANDRA and BONERA, GIANNI eds., *Regesto dei manoscritti del Cartellario Voltiano*, Milano: Hoepli, 2002.

[3] BEVILACQUA, FABIO and BELLODI, GIULIANO and FALOMO, LIDIA eds., *Gli strumenti di Alessandro Volta: Il Gabinetto di fisica dell'Università di Pavia*, Milano: Hoepli, 2002.

ANDREAS KLEINERT examines Volta's attitude towards the heated debates that arose in the German countries between the supporters of *Naturphilosophie* and the defenders of a more traditional approach to the natural sciences. Being in touch with exponents of both camps and providing abundant matter for their contentions as a result of his work on galvanism, Volta has been chosen by the author as a significant external observer of the controversy. What emerges is Volta's closeness to the traditional approach, defended by people like Gilbert and Pfaff, combined with indifference for the other approach. Among the adherents to *Naturphilosophie*, Ritter was the only one to whom Volta paid attention, carefully distinguishing, however, between the outcome of his researches and the associated metaphysical background.

ELENA AGAZZI also deals with the relationship between Volta and the Germanic world. Her analysis confirms the same pattern pointed out by Kleinert, i.e. Volta's deep impact on German culture, accompanied by his substantial estrangement from the philosophical and methodological positions of romantic-oriented men of science. This contrast is examined by considering especially some of the elaborations on galvanism produced by Humboldt and Ritter along romantic lines. The author confirms the well-known role of Pfaff as a defender of Volta's work on galvanism and recalls the various steps which led Volta to a cordial personal and scientific relationship with Lichtenberg.

ALBERTO GIGLI BERZOLARI provides us with a detailed picture of Volta's teaching careers in Como, as physics teacher and director of the public schools, and in Pavia, as professor of experimental physics at the university. This analysis is framed within the wider contemporary political and institutional contexts, with a special focus on the reforms which the educational system underwent in Lombardy between the 1760s and the early 1800s under alternating Austrian and French dominations. The image which emerges is that of a public servant, loyal to his duties, but often frustrated in his scientific research and aspirations by the institutional and teaching constrains to which he had to conform.

LUIGI PEPE points to the institutional role played by Volta in connection with the birth and development of the *Istituto Nazionale*. The *Istituto*, modelled on the *Institut National*, was constituted after Napoleon's 1796 victories in Italy and the subsequent establishment of a number of regional republics. The first national meeting of Italian scientists thus for Pepe is not the famous 1839 one in Pisa, but the 1803 one in Bologna, which actually gave birth to the *Istituto*, with Volta elected as its president. On December 25, 1810, at Napoleon's suggestion, the *Istituto* was changed into *Istituto Reale di Scienze, Lettere e Arti*, with its centre in Milan and sections in Venice, Bologna, Padua and Verona. The number of salaried members was raised to sixty, while there was no limit to the number of honorary members. Pepe outlines the main merits of the *Istituto Reale* for scientific communication in Italy: for the first time Italian scientists could gather together regularly to discuss scientific and organisational problems. Regular correspondence kept members in touch with one another in spite of political divisions.

The final bibliography compiled by GEORGIA SANTANGELO and CARLA GARBARINO is meant to be an introduction to the primary and secondary sources related to Volta. The bibliographical research has been conducted using various sources: archival material, the primary and secondary literature dealing with Volta, databases available on-line and various libraries consulted *in situ*. The bibliography here published is also available on-line in database form at the address http://ppp.unipv.it/Volta/Pages/FFormBiblioVolta.htm.

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